Expanding the Number of Reviewers in Open-Source Projects by Recommending Appropriate Developers

Aleksandr Chueshev[*1]

[1]LIP6 – Sorbonne Universite : UMR7606, Centre National de la Recherche Scientifique – 4 Place JUSSIEU 75252 PARIS CEDEX 05, France

Résumé

Code review is an important part of the development of any software project. Recently, many open source projects have begun practicing lightweight and tool-based code review (a.k.a modern code review) to make the process simpler and more efficient. However, those practices still require reviewers, of which there may not be sufficiently many to ensure timely decisions. In this paper, we propose a recommender-based approach to be used by open-source projects to increase the number of reviewers from among the appropriate developers. We first motivate our approach by an exploratory study of nine projects hosted on GitHub and Gerrit. Secondly, we build the recommender system itself, which, given a code change, initially searches for relevant reviewers based on similarities between the reviewing history and the files affected by the change, and then augments this set with developers who have a similar development history as these reviewers but have little or no relevant reviewing experience. To make these recommendations, we rely on collaborative filtering, and more precisely, on matrix factorization. Our evaluation shows that all nine projects could benefit from our system by using it both to get recommendations of previous reviewers and to expand their number from among the appropriate developers.

[*]Intervenant